

ABSTRACT

A miniature, ultra-high resolution, and color scanning microscope using microchannel and solid-state technology that does not require focus adjustment. One embodiment includes a source of collimated radiant energy for illuminating a sample, a plurality of narrow angle filters comprising a microchannel structure to permit the passage of only unscattered radiant energy through the microchannels with some portion of the radiant energy entering the microchannels from the sample, a solid-state sensor array attached to the microchannel structure, the microchannels being aligned with an element of the solid-state sensor array, that portion of the radiant energy entering the microchannels parallel to the microchannel walls travels to the sensor element generating an electrical signal from which an image is reconstructed by an external device, and a moving element for movement of the microchannel structure relative to the sample. Discloses a method for scanning samples whereby the sensor array elements trace parallel paths that are arbitrarily close to the parallel paths traced by other elements of the sensor array.